

CLAIMS

1. An air filtration system for mounting to an air supply nozzle of a passenger compartment; the air filtration system comprising:

a two-part housing comprising an upper housing part and a lower housing part; the upper and lower housing parts comprising an exterior surface and an interior surface and wherein the interior surface defining an interior cavity;

a filter medium disposed in the interior cavity of the two-part housing;

an inlet nozzle defined by an opening having an inside diameter on the upper housing part; the diameter of the opening being smaller than an inside diameter of the air supply nozzle of the passenger compartment;

an outlet nozzle disposed on the lower housing part; and

an adhesive bonded to at least one of the exterior surface of the upper housing part proximate the inlet nozzle or the air supply nozzle of the passenger compartment.

2. The air filtration system of claim 1, wherein the upper and lower housing parts are attached to one another by detents.

3. The air filtration system of claim 1, wherein the upper and lower housing parts are attached to one another by adhesive bonding, by ultrasonic welding, or by threading.

4. The air filtration system of claim 1, wherein the outlet nozzle of the lower housing part comprises an extension

such that an opening of the outlet nozzle is spaced apart from the exterior surface of the lower housing part.

5. The air filtration system of claim 1, wherein the adhesive is bonded to both the exterior surface of the upper housing part proximate the inlet nozzle and the air supply nozzle of the passenger compartment.

6. The air filtration system of claim 1, wherein the filter medium comprises an electrostatically charged polypropylene non-woven membrane.

7. The air filtration system of claim 1, further comprising an air directional nozzle attached to the outlet nozzle, wherein the air directional nozzle is moveable relative to the lower housing part.

8. The air filtration system of claim 4, further comprising an air directional nozzle attached to the extension of the outlet nozzle.

9. A method for filtering air discharged from an air supply nozzle of a passenger compartment comprising:

attaching a two-part housing of an air filtration system comprising an upper housing part and a lower housing part to the air supply nozzle of the passenger compartment; the upper and lower housing parts comprising an exterior surface and an interior surface and wherein the interior surface defining an interior cavity;

passing air from the air supply nozzle through the interior cavity of the two-part housing via an inlet nozzle

disposed on the upper housing part; the inlet nozzle defining an opening having an inside diameter smaller than an inside diameter of the air supply nozzle;

filtering the air by passing at least a portion of the air entered the inlet nozzle through a filter medium disposed in the interior cavity of the two-part housing;

discharging the filtered air by directing the filtered air through an outlet nozzle disposed on the lower housing part; and

wherein the attaching step comprises bonding at least one of the exterior surface of the upper housing part proximate the inlet nozzle or the air supply nozzle of the passenger compartment with an adhesive.

10. The method of claim 9, further comprising the step of bonding the adhesive to both the exterior surface of the upper housing part proximate the inlet nozzle and the air supply nozzle of the passenger compartment.

11. The method of claim 9, further comprising the step of separating the air filtration system from the air supply nozzle by separating the bonding from at least one of the exterior surface of the upper housing part proximate the inlet nozzle or the air supply nozzle of the passenger compartment.

12. The method of claim 9, wherein the upper housing part and the lower housing part are attached to one another by one of adhesive bonding, ultrasonic welding, detent engagement, or threading engagement.

13. The method of claim 9, wherein the filter medium comprises an electrostatically charged polypropylene non-woven membrane.

14. The method of claim 9, further comprising an air direction nozzle attached to the outlet nozzle of the lower housing part.

15. An air filtration device for filtering air discharged from an air supply source of a passenger compartment comprising:

- a housing comprising an upper section and a lower section, the upper and lower sections comprising an exterior surface and an interior surface, which defines an interior cavity;

- a filter medium disposed in the interior cavity of the housing;

- an inlet nozzle disposed on the upper section, the inlet nozzle being defined by an opening in the upper section;

- an outlet nozzle disposed on the lower housing section;
- and

- wherein an adhesive is bonded to a portion of the exterior surface of the upper section proximate the inlet nozzle, and wherein the adhesive comprises a passage for passing air discharged from the air supply nozzle.

16. The air filtration device of claim 15, wherein the upper and lower sections are attached to one another by one of adhesive bonding, detent attachment, ultrasonic welding, or threaded engagement.

17. The air filtration device of claim 15, further comprising an air directional nozzle attached to the outlet nozzle of the lower section.

18. The air filtration device of claim 15, wherein the adhesive is a two-sided foam adhesive.

19. The air filtration device of claim 15, wherein the filter medium is removable from the housing.

20. The air filtration device of claim 17, wherein the air directional nozzle is attached to the outlet nozzle of the lower section by a ball and socket configuration.